

**REMARKS**

*Status of the claims*

Claims 24 and 25 are cancelled in the instant amendment. Claims 1-8 were previously cancelled. Claims 17-23 are withdrawn. Accordingly, claims 9-16 are currently under examination.

With entry of this amendment, claims 9-12 have been amended. The amendments to the claims add no new matter.

Claim 1 has been amended to recite that the Ds element reintegrates into a plant genome through transposon-mediated excision. Support can be found, *e.g.*, in the specification on page 4, lines 10-12.

For convenience, the rejections are addressed in the order presented in the Office Action mailed March 12, 2003.

*Rejection under 35 U.S.C. § 112, first paragraph--written description*

Claims 24 and 25 were rejected as allegedly lacking adequate written description. In order to expedite prosecution, the claims have been cancelled, thereby obviating the rejection.

*Rejection under 35 U.S.C. § 112, second paragraph*

Claim 25 was rejected as allegedly indefinite in the recitation of the term "population". The rejection is moot in view of the cancellation of the claim..

*Rejections under 35 U.S.C. § 103*

Claims 9-14 remained rejected and claims 24 and 25 were newly rejected as allegedly obvious over McElroy *et al.* in view of Wan *et al.* and Bancrof *et al.* Claims 15 and 16 remained rejected as allegedly unpatenable over the cited art further in view of Perera *et al.* The rejection as applied to claims 24 and 25 is moot in view of the cancellation of the claims. To the extent that the rejection applies to the amended claims, Applicants traverse.

First, the Examiner contends that Applicants' arguments are not persuasive because the claims do not require that the *Ac/Ds* system generate stable transformants in barley or that the transposable element be reactivated and reinsert into the genome. In order to expedite prosecution, the claims have been amended to recite the noted elements.

Next, the Examiner argues that, notwithstanding the failure of the claims to require stable transformation and despite the highly methylated barley genome, stable inheritance of functional heterologous transgenes in barley was well known in the art at time of Applicants' invention and that one of skill would therefore reasonably expect to be successful in generating stable transformants in barley comprising a functional *Ac* or *Ds* transgene. Applicants traverse for reasons of record.

As Applicants previously noted, in order for the *Ac/Ds* system to provide stable transformants in barley, the elements must be introduced into plants and stably integrate into the genome (that is, they must not be subject to rearrangement, deletions, etc. over time). Moreover, they must retain their ability to transpose, *i.e.*, the transposase must not be silenced and the recognition sites must not be methylated or changed in sequences. Lastly, the *Ds* elements must retain the ability to re-insert into the genome. Although, the cited art may describe stable inheritance of functional transgenes, such disclosure provides no basis for predicting the successful transposition and re-insertion of *Ds* elements.

As explained by Dr. Lemaux in the Declaration under 37 C.F.R. § 132 that was submitted with Applicants' previous response, the barley genome is highly methylated and methylation of foreign sequences in barley was known to frequently lead to instability and/or gene silencing. *Ds* elements must retain their structure, *e.g.*, the inverted terminal repeat sequences must be correctly maintained, in order for the element to be excised and re-insert. Given the high degree of methylation and known instability of sequences in the barley genome, one of skill could not reasonably predict that the particular features required for *Ds* activity, *i.e.*, the repeats and the overall structure of the *Ds* element, would be stable over time, such that excision and re-insertion could occur. The cited art provides no evidence relating to the stability of inverted repeat sequences in the barley genome. Thus, the combination of references cited by the Examiner at best only provides a motivation to try to use the *Ac/Ds* system in barley to

Appl. No. 09/384,811  
Amdt. dated September 11, 2003  
Reply to Office Action of March 12, 2003

PATENT

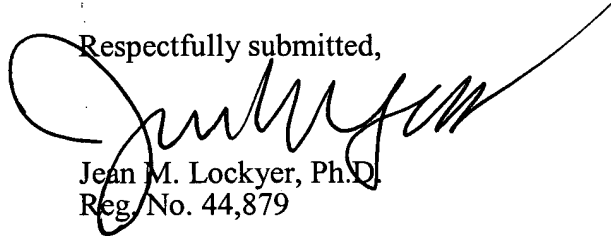
generate stable transformants. There was no reasonable expectation that it would be successful. Accordingly, the invention is unobvious over the cited art. Applicants therefore respectfully request withdrawal of the rejection.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



Jean M. Lockyer, Ph.D.  
Reg. No. 44,879

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
Tel: 415-576-0200  
Fax: 415-576-0300  
JML:jml  
60036249 v1